Listeriosis
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Listeriosis

Overview[1,2]

For a more complete description of listeriosis, refer to the following texts:

- Control of Communicable Diseases Manual (CCDM).
- Red Book, Report of the Committee on Infectious Diseases.

Case Definition[3]

Clinical description

In adults, invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or bacteremia; infection during pregnancy may result in fetal loss through miscarriage or stillbirth, or neonatal meningitis or bacteremia. Other manifestations can also be observed.

Laboratory criteria for diagnosis

- Isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid)

- In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue

Case classification

Confirmed: a clinically compatible case that is laboratory-confirmed

Comment

The usefulness of other laboratory methods such as fluorescent antibody testing or polymerase chain reaction to diagnose invasive listeriosis has not been established.

Information Needed for Investigation

Verify the diagnosis. What laboratory tests were conducted and what were the results?
Establish the extent of illness. Determine if household or other close contacts are, or have been ill, by contacting the health care provider, patient or family members. Determine if case is associated with food recall.
Contact the Regional Communicable Disease Coordinator, if an outbreak is **suspected**.

Case/Contact Follow Up And Control Measures

Determine the source of infection to prevent other cases:

- Does the person have contact with wild or domestic animals or work in animal operations?
- Have there been other cases linked by time, place or person?
- Has the person been exposed to a recalled food product?
- Has the person been exposed to nonpasteurized dairy products?

Control Measures
See the Listeriosis section of the Control of Communicable Diseases Manual (CCDM), "Control of patient, contacts and the immediate environment".

See Listeriosis section of the Red Book.

- Investigate outbreaks to identify a common source of infection, and prevent further exposure to that source.
- Pregnant women and immunocompromised individuals should avoid soft cheeses such as Brie, Camembert, and Mexican style cheeses. They should cook, until steaming hot, leftover foods or foods such as hot dogs. They should avoid deli meats and eat only properly cooked meats and pasteurized dairy products. They should also avoid contact with potentially infective materials, such as aborted animal fetuses on farms.
- Antimicrobial therapy of infection diagnosed during pregnancy may prevent fetal or perinatal infection and its consequences.[(2)]
- Ensure safety of foods of animal origin. Pasteurize all dairy products where possible. Irradiate soft cheeses after ripening or monitor nonpasteurized dairy products, such as soft cheeses, by culturing for *Listeria*.
- Processed foods that are found to be contaminated by *Listeria monocytogenes* (e.g., during routine bacteriologic surveillance) should be recalled.
- Thoroughly wash raw fruits and vegetables before eating.
- Thoroughly cook raw food from animal sources such as beef, pork, or poultry.
- Wash hands, knives, and cutting boards after handling uncooked foods.
- Avoid the use of untreated manure on food crops.

Laboratory Procedures

Human Specimens:
Diagnosis is based on culture of the organism from blood, cerebrospinal fluid or other normally sterile site. Initial testing is NOT provided by the State Public Health Laboratory (SPHL). However, the private laboratory can send an isolate of the cultured organism to the SPHL for confirmation. The SPHL does this testing for epidemiological purposes at no charge to the submitting laboratory.

Food Samples:
Food samples can be sent to SPHL to be tested for *Listeria*. Samples should be collected in a sterile sample container and contain at least four ounces of the food to be tested. Please call the Regional Communicable Disease Coordinator prior to sending a sample.

Reporting Requirements

Listeriosis is a reportable disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services (DHSS) within 3 days of first knowledge or suspicion by telephone, facsimile, or rapid communication.

1. For all reported cases, complete a "Disease Case Report" (CD-1), and a "Record of Investigation of Enteric Infection" (CD-2C) revised 6/02.
2. Entry of the completed CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
3. Send the completed secondary investigation form to the Regional Health Office.
4. All outbreaks or "suspected" outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the Regional Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
5. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the Regional Communicable Disease Coordinator.

References

1. Chin, James, ed. "Listeriosis." Control of Communicable Diseases Manual. 17th ed. Washington, DC: American Public Health Association, 2000: 296-299.
2. American Academy of Pediatrics. "*Listeria monocytogenes* Infections (Listeriosis)." In: Pickering, LK., ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 372-374.
3. Memorandum from the Centers for Disease Control and Prevention dated January 4, 2000. Nationally notifiable infectious disease list and case definition revisions: Update from the 1999 Council of State and Territorial Epidemiologists (CSTE) Meeting.

Other Sources of Information

1. Lorber, Bennett. "*Listeria monocytogenes*." Principles and Practice of Infectious Diseases. 5th ed. Eds. Gerald L. Mandell, John E. Bennett, and Raphael Dolin. New York: Churchill Livingstone, 2000: 2208-2215.
2. Armstrong, Donald and Gellin, Bruce G. "*Listeria monocytogenes* Infections." Bacterial Infections of Humans Epidemiology and Control. 3rd ed. Eds. Alfred S. Evans and Philip S. Brachman. New York: Plenum, 1998: 421-436.

Web Sites

1. Centers for Disease Control and Prevention – Listeriosis (also available in Spanish) http://www.cdc.gov/ncidod/dbmd/diseaseinfo/listeriosis_g.htm (28 July 2003)
2. Handbook on basic facts regarding foodborne pathogenic microorganisms and natural toxins http://vm.cfsan.fda.gov/~mow/intro.html (28 July 2003)
3. Karen B Weinstein. "*Listeria monocytogenes.*" eMedicine Journal, Nov 19 2001, V 2, N 11 http://www.emedicine.com/MED/topic1312.htm (28 July 2003)

Listeriosis

Fact Sheet

What is listeriosis?

Listeriosis is a bacterial infection caused by *Listeria monocytogenes*. While many bacteria generally infect specific locations within the human body, listeria may infect many different sites, such as the brain or spinal cord membranes, or the bloodstream.

Who gets listeriosis?

Anyone can get the disease, but those at highest risk are newborns, the elderly, people with weakened immune systems and pregnant women. About 30 percent of cases occur in newborns within the first three weeks of life.

When do *listeria* infections occur?

Infections occur throughout the year. Although most cases occur sporadically, foodborne outbreaks do occur.

How is listeriosis spread?

Listeria bacteria are widely distributed in nature and can be found in water and soil. Infected animals may also serve as sources. Unlike other organisms, *listeria* can be spread by several different methods. Ingestion (foodborne transmission) of the organism, such as through unpasteurized milk or contaminated vegetables is often a source of cases. In newborn infections, the organism may be transmitted from mother to fetus in utero, or directly to the fetus at the time of birth. Direct contact with the organism can cause lesions on the hands or arms, and person-to-person transmission can occur through sexual contact. Infection is also possible by inhaling the organism.

What are the symptoms of listeriosis?

Because listeriosis can affect many different parts of the body, the symptoms vary. For meningoencephalitis, the onset can be sudden with fever, intense headache, nausea, vomiting and signs of meningeal irritation. In other body locations, various types of lesions at the site of infection are the primary symptom. In most cases, *listeria* infection causes fever and influenza-like symptoms resembling many other illnesses.

How soon after exposure do symptoms appear?

Listeriosis has an extremely variable incubation period. In large outbreaks, the range has extended from three to 70 days but usually within a month.

How is this disease diagnosed?

Specific laboratory tests are the only way to identify this disease. Since many cases may be mild, the disease may be more common than is realized.

Are there any unusual features of this disease?

Listeria infections are a significant risk for pregnant women, who may not experience obvious symptoms. Infection of the fetus can occur before delivery and can cause abortion as early as the second month of pregnancy, but more often in the fifth and six months. An infection later in pregnancy may cause exposure during birth, sometimes resulting in infection of the newborn, which may be fatal.

Does past infection with *listeria* make a person immune?

Past infection appears to produce some protective immunity.

What is the treatment for *listeria* infection?

Several antibiotics are effective against this organism. Ampicillin, either alone or in combination with other antibiotics, is frequently used.

What can be done to prevent the spread of this disease?

Since the organism is widespread in nature, basic sanitary measures such as using only pasteurized dairy products, eating cooked meats and washing hands thoroughly before preparing foods offer the best protection. Pregnant women and persons with weakened immune systems may wish to avoid such foods as soft cheeses and raw hot dogs. Although the risk of listeriosis associated with foods from deli counters is relatively low, pregnant women and immunosuppressed persons may choose to avoid these foods or thoroughly reheat cold cuts before eating.

Missouri Department of Health and Senior Services
Section for Communicable Disease Prevention
Phone: (866) 628-9891 or (573) 751-6113

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES
SECTION OF COMMUNICABLE DISEASE CONTROL AND VETERINARY PUBLIC HEALTH

RECORD OF INVESTIGATION OF ENTERIC ILLNESS

MOHSIS CID#

Information with shaded titles is not required if entered on the CD-1 report or entered into MOHSIS.

NAME: (LAST, FIRST, MI)	DATE OF BIRTH: / /	AGE:	GENDER:	RACE:

PARENT(S) NAME IF NOT ADULT:	PHONE NO.:

HOME ADDRESS:	CITY:	STATE:	ZIP CODE:	COUNTY:

EMPLOYMENT / CHILD CARE (*See reverse side for High-Risk Employment information.)

PLACE OF EMPLOYMENT:	ADDRESS:	PHONE NO.:

OCCUPATION:	JOB DUTIES:

SCHOOL / CHILD CARE ATTENDED:	GRADE OR ROOM:

SCHOOL / CHILD CARE ADDRESS:	CITY:	STATE:	ZIP CODE:

Symptoms:* (Check Yes or No and number the order in which symptoms first presented)

ORDER NO.	SYMPTOM	YES	NO	ORDER NO.	SYMPTOM	YES	NO	ORDER NO.	SYMPTOM	YES	NO
	Nausea	☐	☐		Bloody Diarrhea	☐	☐		Malaise	☐	☐
	Vomiting	☐	☐		Cramps	☐	☐		Headache	☐	☐
	Diarrhea	☐	☐		Chills	☐	☐		Dizziness	☐	☐
	Watery Diarrhea	☐	☐		Fever_____°	☐	☐		Other		

Disease

DIAGNOSIS:	ONSET DATE / TIME:* / / _____ ☐ am ☐ pm	DURATION OF SYMPTOMS: _____ hrs.

INCUBATION PERIOD:*	PHYSICIAN CONSULTED? ☐ Yes ☐ No	DATE: / /	HOSPITALIZED? ☐ Yes ☐ No

PROVIDER NAME:	CITY:	STATE:	PHONE NO.:

TREATMENT: (TYPE, AMOUNT)	DATE:* / /

☐ Recovered ☐ Died	DATE OF DEATH: / /	CAUSE OF DEATH:

Patient History (Limit patient responses to within one disease incubation period.)

TRAVEL: (OUTSIDE OF HOME COMMUNITY) ☐ Yes ☐ No	DATE(S):*	LOCATION(S):

HOME WATER SUPPLY:

☐ Private (type)_____ ☐ Bottled Water (brand) _____

☐ Public Water District (Name)_____ Other water sources: _____

HOME SEWAGE DISPOSAL SYSTEM:

☐ Private (type)_____ ☐ Community System (Name) _____

RECREATIONAL WATER CONTACT: (SWIMMING POOL, LAKE, RIVER, ETC.)

☐ Yes ☐ No Type: _____ Location:_____ Dates:* _____

PET / ANIMAL EXPOSURE: (DOMESTIC PETS, LIVESTOCK, OTHER)

☐ Yes ☐ No Pets/Animals ill: ☐ Yes ☐ No Animal Type(s):_____ Date(s)* of Animal Exposure: _____

Describe Animal Exposure: _____

Location of Animal Exposure:_____

Comments:_____

Food**

	NAME	STREET ADDRESS	CITY / STATE
Grocery stores routinely used:			
Restaurants routinely used:			

OTHER FOOD SOURCES: (e.g., ETHNIC, UNPASTEURIZED, HOME CANNED)	TYPE / LOCATION:

* Epi Calendar (reverse side) may be used to help determine time periods.
** Attach separate 3-day food history if multiple cases are known/suspected.

Please submit this form along with completed CD-1 Report on all enteric cases.

Laboratory Tests*: Record Diagnostic Information in Section 41 of CD-1 Report and/or attach copy of lab slip(s)

Are there other associated cases? ☐ Yes ☐ No	If yes, how many?	How Associated:

List ill contacts:

NAME & ADDRESS	DOB / AGE	SEX	RELATION TO PATIENT	SIMILAR ILLNESS YES	SIMILAR ILLNESS NO	ONSET DATE	LAB CONFIRMED YES	LAB CONFIRMED NO	CD-1 AND ENTERIC FORM COMPLETED YES	CD-1 AND ENTERIC FORM COMPLETED NO
				☐	☐		☐	☐	☐	☐
				☐	☐		☐	☐	☐	☐
				☐	☐		☐	☐	☐	☐
				☐	☐		☐	☐	☐	☐

High Risk Employment Information (e.g., Food Handler, Child Care or Health Care Worker)

SPECIFIC JOB DUTIES:*

DATE(S) WORKED PRIOR TO ONSET OF ILLNESS:*	EXCLUDED FROM WORK? ☐ Yes ☐ No	DATE:* / /

IF YES, BY WHOM:	TITLE:

FOLLOW-UP SPECIMEN(S) REQUIRED? ☐ Yes ☐ No	DATE COLLECTED:* / /	RESULTS:* 1. _____ 2. _____ 3. _____

LAB:	WERE CONTROL MEASURES DISCUSSED WITH PATIENT? ☐ Yes ☐ No	BY:

RETURNED TO WORK? ☐ Yes ☐ No	DATE:* / /	EXPECTED DATE:* / /	EXCLUDED FROM HIGH-RISK DUTIES? ☐ Yes ☐ No

SEXUAL PREFERENCE: ☐ Heterosexual ☐ Homosexual ☐ Bisexual ☐ Unknown ☐ N/A	MULTIPLE PARTNERS? ☐ Yes ☐ No
RECREATIONAL DRUG USE: ☐ Yes ☐ No	DRUGS OF CHOICE:

*Epi Calendar:

MONTH(S) / DATES:	YEAR:	DISEASE:	WORK:

Sunday ____	Monday ____	Tuesday____	Wednesday____	Thursday ____	Friday ____	Saturday ____
Sunday ____	**Monday ____**	**Tuesday____**	**Wednesday____**	**Thursday ____**	**Friday ____**	**Saturday ____**
Sunday ____	**Monday ____**	**Tuesday____**	**Wednesday____**	**Thursday ____**	**Friday ____**	**Saturday ____**

OTHER PERTINENT EPIDEMIOLOGICAL DATA (TO INCLUDE PROBABLE SOURCE):

_____

_____

INVESTIGATOR:	DATE COMPLETED: